Warren County School District

PLANNED INSTRUCTION

COURSE DESCRIPTION

Course Title: Advanced Placement Biology

Course Number: 00316

Course Prerequisites: Successful completion of Academic Biology, Advanced Biology, or Academic Chemistry or permission of the principal.

Course Description: (Include "no final exam" or "final exam required")
Advanced Placement Biology is offered to students who have completed Academic Biology, Advanced Biology, and Academic Chemistry. The College Board's Advanced Placement (AP) program provides capable and motivated students with an opportunity to pursue college level biological studies with still in secondary school. This course is a college level laboratory program that enables students to receive college credit by passing a test with appropriate scores in May of the school year.

Suggested Grade Level: 11-12

Length of Course: _____ One Semester X Two Semesters _____ Other (Describe)

Units of Credit: 1 (Insert ***NONE*** if appropriate.)

PDE *Certification and Staffing Policies and Guidelines (CSPG)* Required Teacher Certification(s) (Insert certificate title and CSPG#) Biology

Certification verified by WCSD Human Resources Department:
X Yes _____ No

Board Approved Textbooks, Software, Materials:
Title: AP Edition Biology 8th edition + AP Test Prep
Publisher: Pearson
ISBN #: 0-13-236667-3
Copyright Date: 2008
Date of WCSD Board Approval: 4/12/10

BOARD APPROVAL:

Date Written: November 2012

Date Approved:_____

Implementation Year: 2012-2013

SPECIAL EDUCATION AND GIFTED REQUIREMENTS

The teacher shall make appropriate modifications to instruction and assessment based on a student's Individual Education Plan (IEP) or Gifted Individual Education Plan (GIEP).

SPECIFIC EDUCATIONAL STANDARDS, ESSENTIAL QUESTIONS, CONTENT, & SKILLS

Keystone Anchors – BIO; **Common Core** – Reading: RST, Writing: WHST **Year:** 2012-13

Course: Advanced Placement Biology **Month:** All Months

August

Basic Biological Chemistry

Standards	Essential Questions	Content	Skills	Resources
BIO.A.2.2.1-Explain how carbon is uniquely suited to form biological macromolecules. BIO.A.2.2.2-Describe how biological macromolecules form from monomers. BIO.A.2.2.3-Compare the structure and function of carbohydrates, lipids, proteins, and nucleic acids in organisms. BIO.A.2.3-Explain how enzymes regulate biochemical reactions within a cell. BIO.A.2.3.1-Describe the role of an enzyme as a catalyst in regulating a specific biochemical reaction. BIO.A.2.3.2-Explain how factors such as pH, temperature, and concentration levels can affect enzyme function. WHST.11-12.2.b-Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. WHST.11-12.2.d-Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. RST.11.2-Determine the central ideas or conclusions of a	What are the chemical principles that affect living things?	• Atoms, molecules, bonding • Acids and bases • Properties of water • Carbon and functional groups • Macromolecules • Chemical reactions, free energy changes, equilibrium • Enzymes, rates of reaction, regulation	• Describe how atoms combine together to form molecules. • Explain how the properties of water make life on Earth possible. • Explain how the laws of thermodynamics relate to the biochemical processes that provide energy to living systems. • Describe the role of carbon in the molecular diversity of life. • Identify the chemical properties of	Biology AP Edition, Campbell and Reece; Textbook and Teacher Materials AP Biology Lab Manual, College Board

	text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. RST.11.3-Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11.4-Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics. RST.11.5-Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas. RST.11.6-Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved. RST.11.8-Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. WHST.11-12.1.d-Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. WHST.11-12.1.e-Provide a concluding statement or section that follows from or supports the argument presented. WHST.11-12.2.e-Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic). WHST.11-12.7-Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.			macromolecules.	

September

Basic Biological Chemistry Continued

Standards	Essential Questions	Content	Skills	Resources
BIO.A.2.2.1-Explain how carbon is uniquely suited to form biological macromolecules. BIO.A.2.2.2-Describe how biological macromolecules form from monomers. BIO.A.2.2.3-Compare the structure and function of carbohydrates, lipids, proteins, and nucleic acids in organisms. BIO.A.2.3-Explain how enzymes regulate biochemical reactions within a cell. BIO.A.2.3.1-Describe the role of an enzyme as a catalyst in regulating a specific biochemical reaction. BIO.A.2.3.2-Explain how factors such as pH, temperature, and concentration levels can affect enzyme function. WHST.11-12.2.b-Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. WHST.11-12.2.d-Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. RST.11.2-Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. RST.11.3-Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11.4-Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are	What are the chemical principles that affect living things?	• Atoms, molecules, bonding • Acids and bases • Properties of water • Carbon and functional groups • Macromolecules • Chemical reactions, free energy changes, equilibrium • Enzymes, rates of reaction, regulation	• Describe how atoms combine together to form molecules. • Explain how the properties of water make life on Earth possible. • Explain how the laws of thermodynamics relate to the biochemical processes that provide energy to living systems. • Describe the role of carbon in the molecular diversity of life. • Identify the chemical properties of macromolecules.	Biology AP Edition, Campbell and Reece; Textbook and Teacher Materials AP Biology Lab Manual, College Board

	used in a specific scientific or technical context relevant to grades 11-12 texts and topics. RST.11.5-Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas. RST.11.6-Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved. RST.11.8-Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. WHST.11-12.1.d-Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. WHST.11-12.1.e-Provide a concluding statement or section that follows from or supports the argument presented. WHST.11-12.2.e-Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic). WHST.11-12.7-Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.				
October	**Cells**				
	Standards	**Essential Questions**	**Content**	**Skills**	**Resources**
	BIO.A.1.1-Explain the characteristics common to all organisms. BIO.A.1.1.1-Describe the characteristics of life shared by all prokaryotic and eukaryotic organisms. BIO.A.1.2-Describe relationships between structure and	How are cell structures adapted to their functions? How do cells produce new cells?	• Prokaryotic and eukaryotic cells • Plant and animal cells • Transport and	• Describe several properties of prokaryotic and eukaryotic cells. • Explain how the	Biology AP Edition, Campbell and Reece; Textbook and Teacher Materials

	function at biological levels of organization. BIO.A.1.2.1-Compare cellular structures and their functions in prokaryotic and eukaryotic cells. BIO.A.1.2.2-Describe and interpret relationships between structure and function at various levels of biological organization (i.e., organelles, cells, tissues, organs, organ systems, and multicellular organisms). BIO.A.4.1-Identify and describe the cell structures involved in transport of materials into, out of, and throughout a cell. BIO.A.4.1.1-Describe how the structure of the plasma membrane allows it to function as a regulatory structure and/or protective barrier for a cell. BIO.A.4.2-Explain mechanisms that permit organisms to maintain biological balance between their internal and external environments. BIO.A.4.2.1-Explain how organisms maintain homeostasis (e.g., thermoregulation, water regulation, oxygen regulation). BIO.B.1.1-Describe the three stages of the cell cycle: interphase, nuclear division, cytokinesis. BIO.B.1.1.1-Describe the events that occur during the cell cycle: interphase, nuclear division (i.e., mitosis or meiosis), cytokinesis. BIO.B.1.1.2-Compare the processes and outcomes of mitotic and meiotic nuclear divisions. WHST.11-12.2.b-Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. WHST.11-12.2.d-Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. WHST.11-12.7-Conduct short as well as more sustained research projects to answer a question (including a self-		the cell membrane • Cellular organelles and the cytoskeleton • Cell cycle--mitosis and meiosis	cell membrane helps maintain homeostasis. • Explain how cells divide. • Compare and contrast the processes of mitosis and meiosis. • Describe how cancer cells escape the controls of the cell cycle.	AP Biology Lab Manual, College Board

	generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. WHST.11-12.2.e-Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic). RST.11.2-Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. RST.11.3-Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11.4-Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics. RST.11.5-Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas. RST.11.6-Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved. RST.11.8-Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. WHST.11-12.1.d-Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. WHST.11-12.1.e-Provide a concluding statement or section that follows from or supports the argument presented.				

November

Energy Transformations

Standards	Essential Questions	Content	Skills	Resources
BIO.A.3.1-Identify and describe the cell structures involved in processing energy. BIO.A.3.1.1-Describe the fundamental roles of plastids (e.g., chloroplasts) and mitochondria in energy transformations. BIO.A.3.2-Identify and describe how organisms obtain and transform energy for their life processes. BIO.A.3.2.1-Compare the basic transformation of energy during photosynthesis and cellular respiration. BIO.A.3.2.2-Describe the role of ATP in biochemical reactions. RST.11.2-Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. RST.11.3-Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11.4-Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics. RST.11.5-Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas. RST.11.6-Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved. RST.11.8-Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. WHST.11-12.1.d-Establish and maintain a formal style and	• How do organisms obtain and use energy?	• ATP, energy transfer, chemiosmosis • Photosynthesis • Cellular Respiration	• Describe the role of ATP in cells. • Explain the light and dark reactions of photosynthesis and describe how some plants have adapted these processes to varying climates. • Explain the major steps of cellular respiration in terms of reactants, products and the energy that they generate.	Biology AP Edition, Campbell and Reece; Textbook and Teacher Materials AP Lab Manual, College Board

	objective tone while attending to the norms and conventions of the discipline in which they are writing. WHST.11-12.1.e-Provide a concluding statement or section that follows from or supports the argument presented. WHST.11-12.2.b-Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. WHST.11-12.2.d-Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. WHST.11-12.2.e-Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic). WHST.11-12.7-Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.				

December **Genetics**

Standards	Essential Questions	Content	Skills	Resources
BIO.B.1.2-Explain how genetic information is inherited. BIO.B.1.2.1-Describe how the process of DNA replication results in the transmission and/or conservation of genetic information. BIO.B.1.2.2-Explain the functional relationships between DNA, genes, alleles, and chromosomes and their roles in inheritance.	• How does cellular information pass from one generation to another? • How does	• DNA: Structure and replication • RNA: Transcription and translation • Regulation of gene expression • Mutations	• Explain how proteins are made from DNA • Analyze how DNA technology has	Biology AP Edition, Campbell and Reece; Textbook and Teacher Materials AP Lab Manual,

	BIO.B.2.1-Compare Mendelian and non-Mendelian patterns of inheritance. BIO.B.2.1.1-Describe and/or predict observed patterns of inheritance (i.e., dominant, recessive, co-dominance, incomplete dominance, sex-linked, polygenic, and multiple alleles). BIO.B.2.1.2-Describe processes that can alter composition or number of chromosomes (i.e., crossing-over, nondisjunction, duplication, translocation, deletion, insertion, and inversion). BIO.B.2.2-Explain the process of protein synthesis (i.e., transcription, translation, and protein modification). BIO.B.2.2.1-Describe how the processes of transcription and translation are similar in all organisms. BIO.B.2.2.2-Describe the role of ribosomes, endoplasmic reticulum, Golgi apparatus, and the nucleus in the production of specific types of proteins. BIO.B.2.3-Explain how genetic information is expressed. BIO.B.2.3.1-Describe how genetic mutations alter the DNA sequence and may or may not affect phenotype (e.g., silent, nonsense, frame-shift). BIO.B.2.4-Apply scientific thinking, processes, tools, and technologies in the study of genetics. BIO.B.2.4.1-Explain how genetic engineering has impacted the fields of medicine, forensics, and agriculture (e.g., selective breeding, gene splicing, cloning, genetically modified organisms, gene therapy). RST.11.2-Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. RST.11.3-Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11.4-Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are	information flow from the cell nucleus to direct the synthesis of proteins in the cytoplasm? • How do scientists manipulate DNA in living cells?	• Recombinant DNA, gel electrophoresis • Viruses • Mendel's laws and probability • Inheritance patterns • Human genetic disorders	influenced the quality of human life. • Explain how genes are inherited and how defects can occur. • Describe how genes are regulated. • Compare and contrast Mendelian and non-Mendelian patterns of inheritance.	College Board

	used in a specific scientific or technical context relevant to grades 11-12 texts and topics. RST.11.5-Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas. RST.11.6-Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved. RST.11.8-Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. WHST.11-12.1.d-Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. WHST.11-12.1.e-Provide a concluding statement or section that follows from or supports the argument presented. WHST.11-12.2.b-Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. WHST.11-12.2.d-Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. WHST.11-12.2.e-Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic). WHST.11-12.7-Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources				

	on the subject, demonstrating understanding of the subject under investigation.				

January

Evolution

Standards	Essential Questions	Content	Skills	Resources
BIO.B.1.2-Explain how genetic information is inherited. BIO.B.1.2.1-Describe how the process of DNA replication results in the transmission and/or conservation of genetic information. BIO.B.1.2.2-Explain the functional relationships between DNA, genes, alleles, and chromosomes and their roles in inheritance. BIO.B.2.1-Compare Mendelian and non-Mendelian patterns of inheritance. BIO.B.2.1.1-Describe and/or predict observed patterns of inheritance (i.e., dominant, recessive, co-dominance, incomplete dominance, sex-linked, polygenic, and multiple alleles). BIO.B.2.1.2-Describe processes that can alter composition or number of chromosomes (i.e., crossing-over, nondisjunction, duplication, translocation, deletion, insertion, and inversion). BIO.B.2.3.1-Describe how genetic mutations alter the DNA sequence and may or may not affect phenotype (e.g., silent, nonsense, frame-shift). BIO.B.2.4-Apply scientific thinking, processes, tools, and technologies in the study of genetics. BIO.B.2.2-Explain the process of protein synthesis (i.e., transcription, translation, and protein modification). BIO.B.2.2.1-Describe how the processes of transcription and translation are similar in all organisms. BIO.B.2.2.2-Describe the role of ribosomes, endoplasmic reticulum, Golgi apparatus, and the nucleus in the production of specific types of proteins. BIO.B.2.3-Explain how genetic information is expressed. BIO.B.2.4.1-Explain how genetic engineering has impacted the fields of medicine, forensics, and agriculture (e.g.,	• What is natural selection? • How can populations evolve to form new species?	• Evidence for evolution • Natural selection • Hardy-Weinberg principle • Population changes • Speciation • Patterns of evolution	• Explain the process of natural selection. • Explain how natural selection can affect allele frequencies of a population. • Describe the mechanisms that lead to the development of a new species. • Explain how genetic mutations can result in changes in a population's genotypes and phenotypes.	Biology AP Edition, Campbell and Reece; Textbook and Teacher Materials AP Lab Manual, College Board

	selective breeding, gene splicing, cloning, genetically modified organisms, gene therapy). RST.11.2-Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. RST.11.3-Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11.4-Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics. RST.11.5-Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas. RST.11.6-Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved. RST.11.8-Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. WHST.11-12.1.d-Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. WHST.11-12.1.e-Provide a concluding statement or section that follows from or supports the argument presented. WHST.11-12.2.b-Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. WHST.11-12.2.d-Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and				

	analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. WHST.11-12.2.e-Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).				

February

Animal Systems

Standards	Essential Questions	Content	Skills	Resources
BIO.A.1.1-Explain the characteristics common to all organisms. BIO.A.1.2-Describe relationships between structure and function at biological levels of organization. BIO.A.1.2.2-Describe and interpret relationships between structure and function at various levels of biological organization (i.e., organelles, cells, tissues, organs, organ systems, and multicellular organisms). BIO.A.2.2.3-Compare the structure and function of carbohydrates, lipids, proteins, and nucleic acids in organisms. BIO.A.3.2-Identify and describe how organisms obtain and transform energy for their life processes. BIO.A.4.2-Explain mechanisms that permit organisms to maintain biological balance between their internal and external environments. BIO.A.4.2.1-Explain how organisms maintain homeostasis (e.g., thermoregulation, water regulation, oxygen regulation). RST.11.2-Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. RST.11.3-Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based	• How does the body maintain homeostasis?	• Nutrition and Digestion • Gas Exchange • Circulation • Immune Response • Internal Control Systems • Reproduction and Development • Nervous System • Movement	• Explain how digestion occurs in different animals. • Compare and contrast the respiratory structures of aquatic and terrestrial animals. • Compare and contrast the patterns of circulation in vertebrates and invertebrates. • Explain the mechanisms by which animals manage and eliminate nitrogenous waste. • Describe how	Biology AP Edition, Campbell and Reece; Textbook and Teacher Materials AP Lab Manual, College Board

	on explanations in the text. RST.11.4-Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11â€“12 texts and topics. RST.11.5-Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas. RST.11.6-Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved. RST.11.8-Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. WHST.11-12.1.d-Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. WHST.11-12.1.e-Provide a concluding statement or section that follows from or supports the argument presented. WHST.11-12.2.b-Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. WHST.11-12.2.d-Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. WHST.11-12.2.e-Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic). WHST.11-12.7-Conduct short as well as more sustained			different animals respond to stimuli in their environments. • Explain how animals move based on their skeletal and muscular systems. • Explain how land animals and aquatic animals reproduce. • Describe different patterns of embryo development in animals.	

	research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.				

March **Animal Systems Continued**

Standards	Essential Questions	Content	Skills	Resources
BIO.A.1.1-Explain the characteristics common to all organisms. BIO.A.1.2-Describe relationships between structure and function at biological levels of organization. BIO.A.1.2.2-Describe and interpret relationships between structure and function at various levels of biological organization (i.e., organelles, cells, tissues, organs, organ systems, and multicellular organisms). BIO.A.2.2.3-Compare the structure and function of carbohydrates, lipids, proteins, and nucleic acids in organisms. BIO.A.3.2-Identify and describe how organisms obtain and transform energy for their life processes. BIO.A.4.2-Explain mechanisms that permit organisms to maintain biological balance between their internal and external environments. BIO.A.4.2.1-Explain how organisms maintain homeostasis (e.g., thermoregulation, water regulation, oxygen regulation). RST.11.2-Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. RST.11.3-Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11.4-Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are	• How does the body maintain homeostasis?	• Nutrition and Digestion • Gas Exchange • Circulation • Immune Response • Internal Control Systems • Reproduction and Development • Nervous System • Movement	• Explain how digestion occurs in different animals. • Compare and contrast the respiratory structures of aquatic and terrestrial animals. • Compare and contrast the patterns of circulation in vertebrates and invertebrates. • Explain the mechanisms by which animals manage and eliminate nitrogenous waste. • Describe how different animals respond to stimuli in their	Biology AP Edition, Campbell and Reece; Textbook and Teacher Materials AP Lab Manual, College Board

	used in a specific scientific or technical context relevant to grades 11-12 texts and topics. RST.11.5-Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas. RST.11.6-Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved. RST.11.8-Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. WHST.11-12.1.d-Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. WHST.11-12.1.e-Provide a concluding statement or section that follows from or supports the argument presented. WHST.11-12.2.b-Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. WHST.11-12.2.d-Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. WHST.11-12.2.e-Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic). WHST.11-12.7-Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on			environments. • Explain how animals move based on their skeletal and muscular systems. • Explain how land animals and aquatic animals reproduce. • Describe different patterns of embryo development in animals.	

	the subject, demonstrating understanding of the subject under investigation.				
April	**Animal Systems Continued**				
	Standards	**Essential Questions**	**Content**	**Skills**	**Resources**
	BIO.A.1.1-Explain the characteristics common to all organisms. BIO.A.1.2-Describe relationships between structure and function at biological levels of organization. BIO.A.1.2.2-Describe and interpret relationships between structure and function at various levels of biological organization (i.e., organelles, cells, tissues, organs, organ systems, and multicellular organisms). BIO.A.2.2.3-Compare the structure and function of carbohydrates, lipids, proteins, and nucleic acids in organisms. BIO.A.3.2-Identify and describe how organisms obtain and transform energy for their life processes. BIO.A.4.2-Explain mechanisms that permit organisms to maintain biological balance between their internal and external environments. BIO.A.4.2.1-Explain how organisms maintain homeostasis (e.g., thermoregulation, water regulation, oxygen regulation). RST.11.2-Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. RST.11.3-Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11.4-Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics. RST.11.5-Analyze how the text structures information or	• How does the body maintain homeostasis?	• Nutrition and Digestion • Gas Exchange • Circulation • Immune Response • Internal Control Systems • Reproduction and Development • Nervous System • Movement	• Explain how digestion occurs in different animals. • Compare and contrast the respiratory structures of aquatic and terrestrial animals. • Compare and contrast the patterns of circulation in vertebrates and invertebrates. • Explain the mechanisms by which animals manage and eliminate nitrogenous waste. • Describe how different animals respond to stimuli in their environments. • Explain how animals move	Biology AP Edition, Campbell and Reece; Textbook and Teacher Materials AP Lab Manual, College Board

	ideas into categories or hierarchies, demonstrating understanding of the information or ideas. RST.11.6-Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved. RST.11.8-Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. WHST.11-12.1.d-Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. WHST.11-12.1.e-Provide a concluding statement or section that follows from or supports the argument presented. WHST.11-12.2.b-Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. WHST.11-12.2.d-Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. WHST.11-12.2.e-Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic). WHST.11-12.7-Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.			based on their skeletal and muscular systems. • Explain how land animals and aquatic animals reproduce. • Describe different patterns of embryo development in animals.	

May	Review for AP Test				
	Standards	**Essential Questions**	**Content**	**Skills**	**Resources**

ASSESSMENTS

Suggested Formative Assessments: The teacher will develop and use standards-based assessments throughout the course.

- Pre-Assessments of prior knowledge (e.g. entrance cards or KWL chart)
- Labs/lab reports
- Bell ringers/Problems of the Day(PODs)
- Discussions
- Teacher observation/Questioning
- Graphic organizers (e.g. Venn diagrams, word mapping, webbing, KWL chart, etc.)
- Summarizing
- Retelling
- Note-taking
- Problem-based learning modules
- Authentic assessment
- Oral presentations
- Outlining
- Journaling
- Student presentations/projects
- Open-ended response
- Classroom Performance System (CPS)

Suggested Summative Assessments:

- Essays
- Open-Ended Responses
- Projects
- Quizzes/tests
- Student presentations
- Portfolios
- Lab Practical

- Lab Reports

District Approved Assessment Instruments

- Any district approved assessment instrument

Portfolio Assessment: _____ Yes __X__ No

District-wide Final Examination Required: _____ Yes __X__ No

Course Challenge Assessment (Describe):

WRITING TEAM: WCSD Biology Teachers

WCSD STUDENT DATA SYSTEM INFORMATION

1. Is there a required final examination? __X__ Yes _____ No
2. Does this course issue a mark/grade for the report card?

   __X__ Yes _____ No
3. Does this course issue a Pass/Fail mark? _____ Yes __X__ No
4. Is the course mark/grade part of the GPA calculation?

   __X__ Yes _____ No
5. Is the course eligible for Honor Roll calculation? __X__ Yes _____ No
6. What is the academic weight of the course?

   _____ No weight/Non credit _____ Standard weight

   __X__ Enhanced weight (Describe) As per current school board policy